GRADE 12
DIPLOMA EXAMINATION

Mathematics 30

January 1991

Alberta
EDUCATION

DESCRIPTION

Time: 2½ hours

Total possible marks: 65

This is a **closed-book** examination consisting of **three** parts:

PART A has 40 multiple-choice questions each with a value of one mark.

PART B has 12 numerical-response questions each with a value of one mark.

PART C has three written-response questions for a total of 13 marks.

A tear-out formula and z-score page is included in this booklet.

NOTE: The perforated pages at the back of this booklet may be torn out and used for your rough work. **No marks** will be given for work done on the tear-out pages.

GENERAL INSTRUCTIONS

Fill in the information required on the answer sheet and the examination booklet as directed by the examiner.

You are expected to provide your own calculator.

Carefully read the instructions for each part before proceeding.

DO NOT FOLD EITHER THE ANSWER SHEET OR THE EXAMINATION BOOKLET.

The presiding examiner will collect your answer sheet and examination booklet and send them to Alberta Education.

JANUARY 1991

PART A

INSTRUCTIONS

In this part of the examination, there are 40 multiple-choice questions each with a value of one mark. All numbers used in the questions are to be considered as **exact** numbers and are not the result of a measurement.

Read each question carefully and decide which of the choices **best** completes the statement or answers the question. Locate that question number on the separate answer sheet provided and fill in the space that corresponds to your choice. **Use an HB pencil only.**

Example		**Answer Sheet**			

This diploma examination is for the subject of

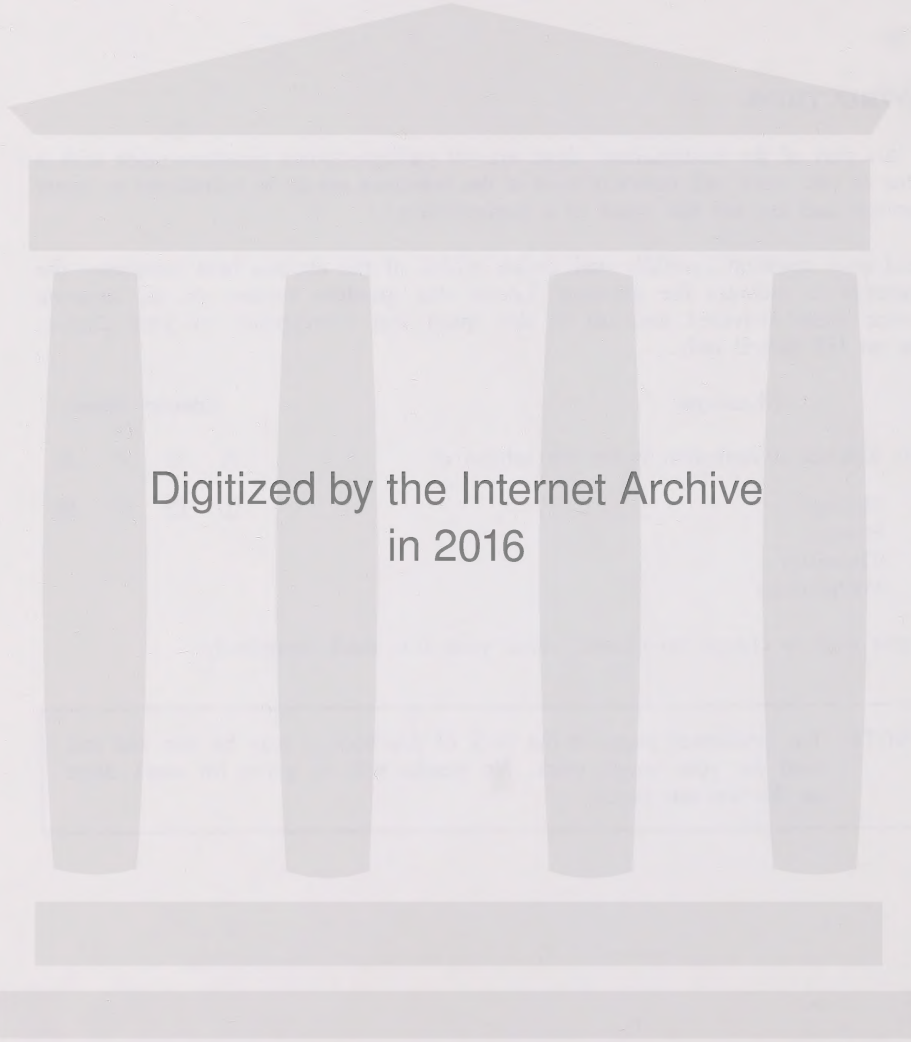|		A	B	C	D
A.	Biology	①	②	③	●
B.	Physics				
C.	Chemistry				
D.	Mathematics				

If you wish to change an answer, erase your first mark completely.

> NOTE: The perforated pages at the back of this booklet may be torn out and used for your rough work. **No marks** will be given for work done on the tear-out pages.

DO NOT TURN THE PAGE TO START THE EXAMINATION UNTIL TOLD TO DO SO BY THE PRESIDING EXAMINER.

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1. In $\triangle ABC$, $a = 11$, $b = 16$, and $\angle C = 78°$. The measure of c correct to the nearest tenth is

   A. 21.2
   B. 20.3
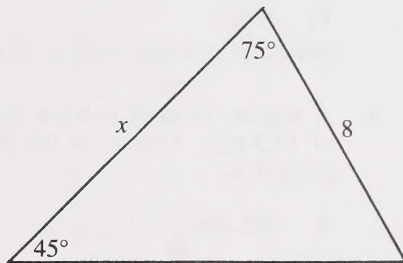   C. 18.5
   D. 17.4

2. In the diagram at the right, the exact value of x is

   A. $8\sqrt{2}$

   B. $4\sqrt{6}$

   C. $\dfrac{8\sqrt{6}}{3}$

   D. $4\sqrt{2}$

3. If $\cos\left(\dfrac{\pi}{2} - \theta\right) = \dfrac{1}{2}$, then the value of $\sin\theta$ is

   A. $-\dfrac{\sqrt{3}}{2}$

   B. $-\dfrac{1}{2}$

   C. $\dfrac{1}{2}$

   D. $\dfrac{\sqrt{3}}{2}$

4. If $\cos\theta = \dfrac{1}{4}$ and θ is acute, then the value of $\tan\theta$ correct to the nearest tenth is

   A. 75.5
   B. 14.0
   C. 3.9
   D. 0.9

5. In $\triangle ABC$, the measure of AC is 9 cm and the measure of BC is 16 cm. If M is the midpoint of BC and the measure of AM is 10 cm, then the measure of $\angle C$ correct to the nearest tenth of a degree is

   A. $51.3°$

   B. $71.8°$

   C. $108.2°$

   D. $128.7°$

6. A regular 11-sided polygon is inscribed in a circle that has a radius of 13.3 mm. Correct to the nearest square millimetre, the area of this polygon is

   A.   526 mm^2

   B.   618 mm^2

   C.   726 mm^2

   D.   818 mm^2

7. In the diagram shown at the right, the measures of $\angle A$ and $\angle C$ are equal and the measures of $\angle B$ and $\angle D$ are equal. The measure of x correct to the nearest tenth is
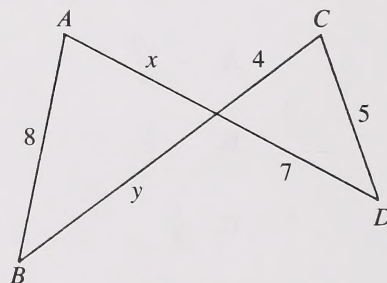
   A.   11.2
   B.   10.0
   C.   6.4
   D.   5.7

8. If $2 - 2\cos^2\theta = \sin\theta$, $0 \leqq \theta < 2\pi$, then all possible values of θ are

   A. $0, \dfrac{\pi}{2}, \pi$

   B. $0, \dfrac{\pi}{6}, \dfrac{5\pi}{6}, \pi$

   C. $\dfrac{\pi}{2}, \dfrac{3\pi}{2}, \dfrac{\pi}{3}, \dfrac{5\pi}{3}$

   D. $\dfrac{\pi}{6}, \dfrac{\pi}{2}, \dfrac{5\pi}{6}, \dfrac{3\pi}{2}$

-2-

9. An angle at the centre of a circle that has a radius of 2 cm is subtended by an arc $\sqrt{3}$ cm long. The measure of this angle correct to the nearest hundredth of a radian is

A. 0.52 rad
B. 0.87 rad
C. 1.05 rad
D. 1.15 rad

10. Which equation describes the locus of points in a plane that are equidistant from $(5, -6)$ and that pass through $(1, 9)$?

A. $(x + 1)^2 + (y + 9)^2 = 241$

B. $(x - 1)^2 + (y - 9)^2 = 241$

C. $(x + 5)^2 + (y - 6)^2 = 241$

D. $(x - 5)^2 + (y + 6)^2 = 241$

11. The points $P(2, -4)$, $Q(-4, -4)$, and $R(-4, 6)$ lie on a circle. The centre of this circle is in quadrant

A. I
B. II
C. III
D. IV

12. For the circle $x^2 + y^2 + 2x - 4y - 20 = 0$, the centre and radius respectively are

A. $(1, -2)$ and 25
B. $(1, -2)$ and 5
C. $(-1, 2)$ and 25
D. $(-1, 2)$ and 5

13. The graph of a hyperbola intersects its transverse axis at

A. a focus
B. a vertex
C. the origin
D. an asymptote

14. A circle with centre (3, 5) is tangent to $x + y - 16 = 0$. Correct to the nearest tenth, the length of a chord that joins the end points of two perpendicular diameters is

A. 11.3
B. 10.0
C. 8.0
D. 5.7

15. A parabola is symmetrical with respect to the y-axis. If $P(2, -5)$ is a point on the parabola, then another point on the parabola must be

A. (0, 0)
B. (2, 5)
C. (-2, 5)
D. (-2, -5)

16. The end points of the minor axis of an ellipse are at $(\pm 6, 0)$ and the end points of the major axis are at $(0, \pm 8)$. The foci of this ellipse are at

A. $(\pm 2\sqrt{7}, 0)$

B. $(\pm 10, 0)$

C. $(0, \pm 2\sqrt{7})$

D. $(0, \pm 10)$

17. The diagram at the right shows a semi-elliptical arch. Correct to the nearest tenth of a metre, the height (h) of the arch 3 m from the vertical axis is

A. 4.9 m
B. 9.8 m
C. 12.0 m
D. 14.3 m

-4-
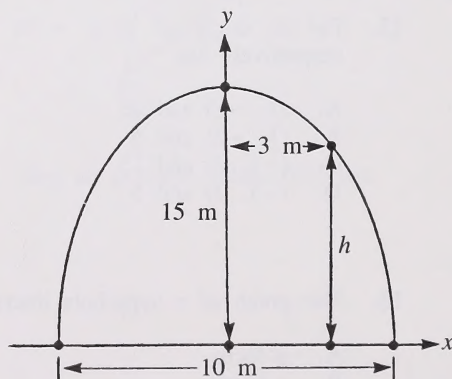
18. The foci of a hyperbola are at $(0, \pm 8)$. If the transverse axis is 6 units long, then an equation of this hyperbola is

A. $55x^2 - 9y^2 = 495$

B. $55y^2 - 9x^2 = 495$

C. $9y^2 - 55x^2 = 495$

D. $9x^2 - 55y^2 = 495$

19. For the parabola $x^2 = -\frac{3}{8}y$, the directrix is

A. $y = \frac{3}{32}$

B. $y = \frac{3}{16}$

C. $y = \frac{3}{8}$

D. $y = \frac{3}{2}$

20. In the diagram at the right, P is a point on the hyperbola that is centred at the origin. The foci of this hyperbola are at A and B. If the measure of PA is 140 cm, the measure of PB 80 cm, and the measure of AB 100 cm, then the equation of this hyperbola is

A. $\frac{x^2}{900} - \frac{y^2}{1600} = 1$

B. $\frac{x^2}{900} - \frac{y^2}{3400} = 1$

C. $\frac{x^2}{1600} - \frac{y^2}{900} = 1$

D. $\frac{x^2}{3400} - \frac{y^2}{900} = 1$
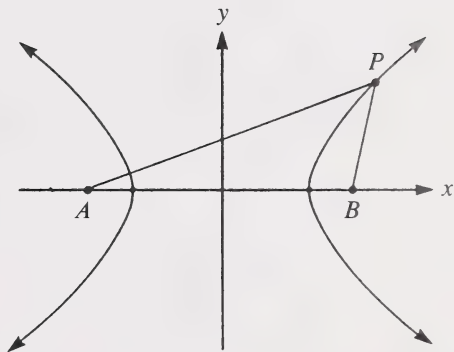
21. The sum of an infinite geometric series exists if

    A. $r < 1$
    B. $r \leqq 1$
    C. $-1 < r < 1$
    D. $-1 \leqq r \leqq 1$

22. The value of $\displaystyle\sum_{n=3}^{6} (-2)^n$ is

    A. 40
    B. 42
    C. 120
    D. 126

23. The $\displaystyle\lim_{n\to\infty} \left(\frac{1}{3}\right)^n$ is

    A. 0
    B. 1
    C. ∞
    D. impossible to determine

24. If the 8th term of a geometric sequence is $-15\,309$ and the common ratio is -3, then the sum of the first 6 terms of the corresponding series is

    A. -1274
    B. -2548
    C. 2548
    D. 11 480

25. The sum of the arithmetic series $3 + 12 + 21 + \ldots + 597$ is

    A. 19 200
    B. 19 500
    C. 19 800
    D. 20 100

26. In an arithmetic sequence, $t_4 + t_{13} = 99$ and $t_7 = 39$. The first term of this sequence is

    A. -7
    B. -3
    C. 3
    D. 7

27. It is estimated that in 15 years a student will require $20 000 to pay first-year college expenses. If money is compounded semi-annually at 10% per annum, then the amount that an individual must invest now is

   A. $9620.34
   B. $4787.84
   C. $4627.55
   D. $1146.17

28. Two dice are to be rolled and their sums recorded on the chart at the right. One example is shown. The probability that on one throw of the dice the sum will be greater than 5 is

   A. $\dfrac{13}{18}$

   B. $\dfrac{2}{3}$

   C. $\dfrac{7}{12}$

   D. $\dfrac{5}{18}$

Number rolled on die 1

sum of 6 + 2 = 8
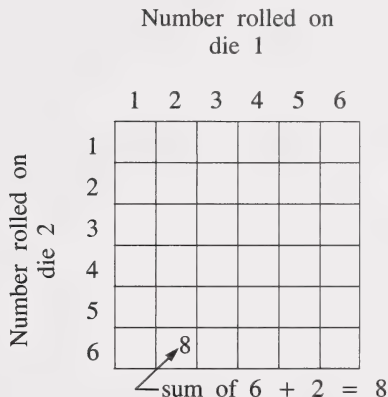
29. Extensive testing of a manufacturer's engines has determined that their "lives" are normally distributed with a mean of 118 000 km and a standard deviation of 25 000 km. The manufacturer produces 30 000 engines and guarantees them for 80 000 km. The number of engines expected to be repaired under this guarantee is

   A. 1929
   B. 1965
   C. 4560
   D. 4650

30. The results for an examination were normally distributed with a mean of 65 and a standard deviation of 12. If 330 students received a mark greater than 80, then the number of students who wrote the examination was

   A. 1232
   B. 2464
   C. 2794
   D. 3125

31. In a community of 18 270 families, 90 families were surveyed regarding the number of television sets they own. The results are summarized in the table at the right. Based on these survey results, the expected number of families owning at least two television sets is
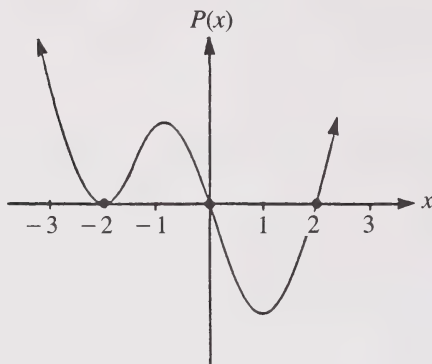
Survey Results	
Number of TV Sets	Number of Families
0	4
1	38
2	45
3	3

   A. 8222
   B. 8770
   C. 9135
   D. 9744

32. Correct to the nearest tenth, the population standard deviation for the squares of the first five natural numbers is

   A. 1.8
   B. 2.6
   C. 6.6
   D. 8.6

33. The mean on a test is $5k$ with a standard deviation of $k - 2$. A student's score on the test is represented by $8k - 16$. If the student's z-score is 2, then the actual score is

   A. 80
   B. 60
   C. 20
   D. 10

34. If $\log_2(1 - x) - \log_2(11 + x) = -1$, then $\log_2(5 + x)$ is

   A. -3
   B. 1
   C. 3
   D. undefined

35. The range of $f(x) = 2^x$ is

   A. $x \geqq 0$
   B. $x > 0$
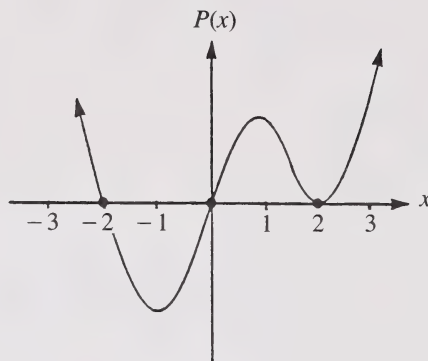   C. $f(x) \geqq 0$
   D. $f(x) > 0$

36. One factor of $10x^3 + 51x^2 + 3x - 10$ is $x + 5$. The other two factors are

A. $2x + 1$ and $5x - 2$
B. $2x - 1$ and $5x + 2$
C. $2x + 5$ and $5x - 1$
D. $2x - 5$ and $5x - 1$

37. If $(5x^a - 2)^2$ is a 16th-degree polynomial, then the value of a is

A. 2
B. 4
C. 8
D. 14

38. For an integral polynomial function $P(x)$, $P(5) = 0$ and $P(-2) = 0$. One factor of this polynomial is

A. $x - 2$

B. $x + 5$

C. $x^2 - 3x - 10$

D. $x^2 + 3x - 10$

39. If -1 and -2 are x-intercepts of the graph of $y = x^3 + ax^2 - x + b$, then the values of a and b respectively are

A. 2 and 2
B. 2 and -2
C. -2 and 2
D. -2 and -2

40. The sketch that illustrates the graph of $P(x) = -a(x^3 - 4x)(x - 2)$, where $a > 0$, is
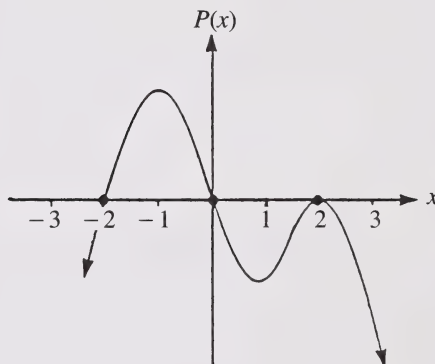
A.

$P(x)$

x

$-3 \quad -2 \quad -1 \qquad 1 \quad 2 \quad 3$

B.

$P(x)$

x

$-3 \quad -2 \quad -1 \qquad 1 \quad 2 \quad 3$

C.

$P(x)$

x

$-3 \quad -2 \quad -1 \qquad 1 \quad 2 \quad 3$

D.

$P(x)$

x

$-3 \quad -2 \quad -1 \qquad 1 \quad 2 \quad 3$

YOU HAVE NOW COMPLETED PART A. PROCEED DIRECTLY TO PART B.

PART B

| | **Sample Questions and Solutions** | **Answer Sheet** |

1. If θ is acute and $\sin \theta = 0.6735$, then the measure of θ correct to the nearest tenth of a degree is _____ .

    $\theta = 42.33777464...°$

    RECORD 042.3

2. For the arithmetic series $-8 + (-5) + (-2) + \ldots + (85)$, the number of terms correct to the nearest tenth is _____ .

    $85 = -8 + (n - 1)(3)$

    $93 = 3n - 3$

    $n = 32$

    RECORD 032.0

If you wish to change an answer, erase **all** traces of your first answer.

> NOTE: The perforated pages at the back of this booklet may be torn out and used for your rough work. **No marks** will be given for work done on the tear-out pages.

START PART B IMMEDIATELY.

1. In the diagram at the right, AD is an altitude of $\triangle ABC$. The measure of AD correct to the nearest tenth is _____ .
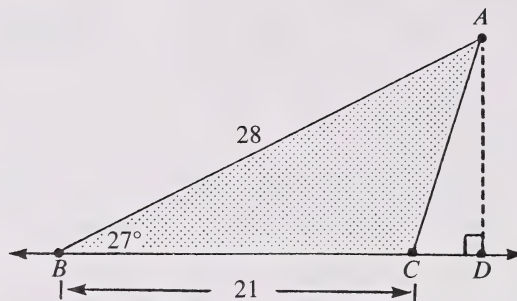
2. The base angles of an isosceles triangle are each 54° and the length of the base of the triangle is 8 cm. The length of each of the other two sides of the triangle correct to the nearest tenth of a centimetre is _____ .

3. In the diagram at the right, line AB is an asymptote to the hyperbola $\dfrac{x^2}{36} - \dfrac{y^2}{16} = 1$. The measure of θ correct to the nearest tenth of a degree is _____ .
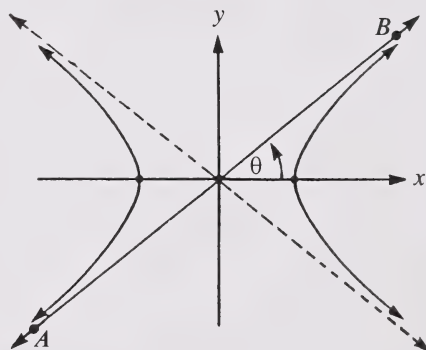
4. If the lengths of the major and minor axes of an ellipse are $2a$ and $2b$ respectively, then the area of the ellipse is given by $A = \pi ab$. Correct to the nearest tenth, the area of an ellipse with vertices at $(0, \pm 7)$ and foci at $(0, \pm 6)$ is _____ .

5. For the parabola $(x - 3)^2 = 58(y + 2),$ the distance from the vertex to the focus correct to the nearest tenth is _____ .

6. In a geometric sequence, $a = 125$ and $t_4 = 13\ 824.$ Correct to the nearest tenth, the common ratio for this sequence is _____ .

7. If the infinite geometric series $1 + \tan \theta + \tan^2 \theta + \ ...$ has a sum of 6 and $0° < \theta < 90°,$ then the measure of θ correct to the nearest tenth of a degree is _____ .

8. A mark of 73 on an examination translates to a z-score of 1.6. If the mean is 64, then the standard deviation correct to the nearest tenth is _____ .

9. The histogram at the right indicates the marks awarded on an examination. One paper is drawn from the file. Correct to the nearest tenth, the probability that it will have a score between 45 and 50 is _____ .

Number of Papers

Marks Awarded
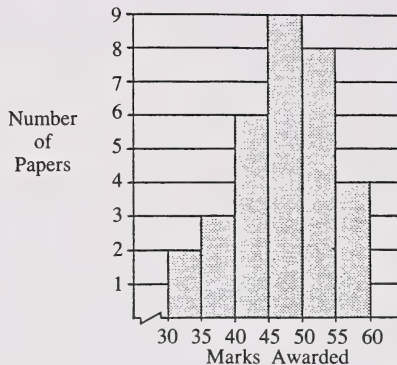
10. If $240 = 15(1.5)^x$, then the value of x correct to the nearest tenth is _____ .

11. When $x^3 - 3x^2 + 5x + 1$ and $x^3 - 2x^2 - x + 10$ are each divided by $x - a$, the remainders are equal. The value of a correct to the nearest tenth is _____ .

12. When $5x^3 - 7x^2 + 2x + 1$ is divided by $x - 3$, the remainder correct to the nearest tenth is _____ .

YOU HAVE NOW COMPLETED PART B. PROCEED DIRECTLY TO PART C.

PART C

1. An auditorium has eight seats in the first row. Each subsequent row has four more seats than the preceding row.

   a. How many seats are there in the 16th row?

   The number of seats is _____

   b. All together, there are 1400 seats in the auditorium. How many rows of seats are there?

   The number of rows is _____

Use the following information to answer question 2.

Growth of Bacteria

$F = C\left(2^{\frac{t}{d}}\right)$, where F = final number of bacteria
C = initial number of bacteria
t = time in minutes
d = doubling period in minutes

2. a. A research scientist establishes that bacteria in a culture double in number every 45 minutes. If there are 3000 bacteria initially, and all bacteria live, how many bacteria will there be immediately after 22 minutes?

The number of bacteria is _____

b. Expressed as a whole number of minutes, what is the minimum number of minutes that it will take for the population of bacteria to exceed 43 000?

The minimum number of minutes is _____

3. Prove that $(1 + \cos \theta)(\csc \theta - \cot \theta) = \sin \theta$, where $\theta \neq n\pi$, $n \in I$.

SHOW CLEARLY ALL SUBSTITUTIONS AND PROCEDURES.

LS	RS

YOU HAVE NOW COMPLETED THE EXAMINATION. IF YOU HAVE TIME, YOU MAY WISH TO GO BACK AND CHECK YOUR ANSWERS.

MATHEMATICS 30
FORMULA SHEET

I. Trigonometry

1. $\pi = 3.14159$

2. $\dfrac{a}{\sin A} = \dfrac{b}{\sin B} = \dfrac{c}{\sin C}$

3. $a^2 = b^2 + c^2 - 2bc \cos A$

4. $\sin^2 A + \cos^2 A = 1$

5. $1 + \tan^2 A = \sec^2 A$

6. $1 + \cot^2 A = \csc^2 A$

7. $\sin\left(\dfrac{\pi}{2} - \theta\right) = \cos \theta$

8. $\cos\left(\dfrac{\pi}{2} - \theta\right) = \sin \theta$

9. $\sin(A + B) = \sin A \cos B + \cos A \sin B$

10. $\sin(A - B) = \sin A \cos B - \cos A \sin B$

11. $\cos(A + B) = \cos A \cos B - \sin A \sin B$

12. $\cos(A - B) = \cos A \cos B + \sin A \sin B$

13. $\sin(-\theta) = -\sin \theta$

14. $\cos(-\theta) = \cos \theta$

15. $\tan(-\theta) = -\tan \theta$

II. Quadratic Relations

1. $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

2. $d = \dfrac{|Ax_1 + By_1 + C|}{\sqrt{A^2 + B^2}}$

3. $M\left(\dfrac{x_1 + x_2}{2}, \dfrac{y_1 + y_2}{2}\right)$

4. $(x - h)^2 + (y - k)^2 = r^2$

5. $x^2 + y^2 + Dx + Ey + F = 0$

6. $(y - k)^2 = 4p(x - h)$

7. $(x - h)^2 = 4p(y - k)$

8. $\dfrac{x^2}{a^2} + \dfrac{y^2}{b^2} = 1, \; a^2 = b^2 + c^2$

9. $\dfrac{y^2}{a^2} + \dfrac{x^2}{b^2} = 1, \; a^2 = b^2 + c^2$

10. $\dfrac{x^2}{a^2} - \dfrac{y^2}{b^2} = 1, \; c^2 = a^2 + b^2$

11. $\dfrac{y^2}{a^2} - \dfrac{x^2}{b^2} = 1, \; c^2 = a^2 + b^2$

III. Sequences, Series, and Limits

1. $t_n = a + (n - 1)d$

2. $S_n = \dfrac{n(a + t_n)}{2}$

3. $S_n = \dfrac{n[2a + (n - 1)d]}{2}$

4. $A = P(1 + i)^n$

5. $t_n = ar^{n-1}$

6. $S_n = \dfrac{a(r^n - 1)}{r - 1}$

7. $S_n = \dfrac{rt_n - a}{r - 1}$

8. $S = \dfrac{a}{1 - r}, \; -1 < r < 1$

IV. Statistics

1. $\mu = \dfrac{x_1 + x_2 + \ldots + x_n}{n}$

2. $\sigma = \sqrt{\dfrac{(x_1 - \mu)^2 + \ldots + (x_n - \mu)^2}{n}}$

3. $z = \dfrac{x - \mu}{\sigma}$
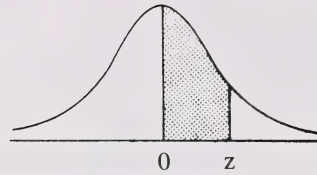
AREAS UNDER THE STANDARD NORMAL CURVE

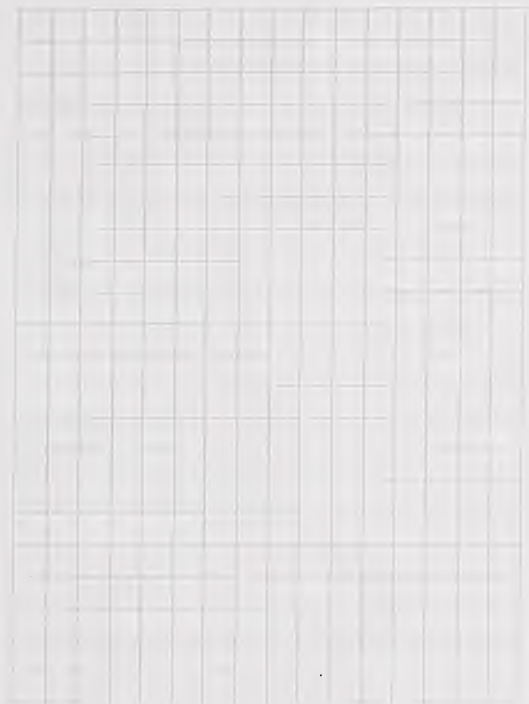| z	0	1	2	3	4	5	6	7	8	9
0.0	0.0000	0.0040	0.0080	0.0120	0.0160	0.0199	0.0239	0.0279	0.0319	0.0359
0.1	0.0398	0.0438	0.0478	0.0517	0.0557	0.0596	0.0636	0.0675	0.0714	0.0754
0.2	0.0793	0.0832	0.0871	0.0910	0.0948	0.0987	0.1026	0.1064	0.1103	0.1141
0.3	0.1179	0.1217	0.1255	0.1293	0.1331	0.1368	0.1406	0.1443	0.1480	0.1517
0.4	0.1554	0.1591	0.1628	0.1664	0.1700	0.1736	0.1772	0.1808	0.1844	0.1879
0.5	0.1915	0.1950	0.1985	0.2019	0.2054	0.2088	0.2123	0.2157	0.2190	0.2224
0.6	0.2258	0.2291	0.2324	0.2357	0.2389	0.2422	0.2454	0.2486	0.2518	0.2549
0.7	0.2580	0.2612	0.2642	0.2673	0.2704	0.2734	0.2764	0.2794	0.2823	0.2852
0.8	0.2881	0.2910	0.2939	0.2967	0.2996	0.3023	0.3051	0.3078	0.3106	0.3133
0.9	0.3159	0.3186	0.3212	0.3238	0.3264	0.3289	0.3315	0.3340	0.3365	0.3389
1.0	0.3413	0.3438	0.3461	0.3485	0.3508	0.3531	0.3554	0.3577	0.3599	0.3621
1.1	0.3643	0.3665	0.3686	0.3708	0.3729	0.3749	0.3770	0.3790	0.3810	0.3830
1.2	0.3849	0.3869	0.3888	0.3907	0.3925	0.3944	0.3962	0.3980	0.3997	0.4015
1.3	0.4032	0.4049	0.4066	0.4082	0.4099	0.4115	0.4131	0.4147	0.4162	0.4177
1.4	0.4192	0.4207	0.4222	0.4236	0.4251	0.4265	0.4279	0.4292	0.4306	0.4319
1.5	0.4332	0.4345	0.4357	0.4370	0.4382	0.4394	0.4406	0.4418	0.4429	0.4441
1.6	0.4452	0.4463	0.4474	0.4484	0.4495	0.4505	0.4515	0.4525	0.4535	0.4545
1.7	0.4554	0.4564	0.4573	0.4582	0.4591	0.4599	0.4608	0.4616	0.4625	0.4633
1.8	0.4641	0.4649	0.4656	0.4664	0.4671	0.4678	0.4686	0.4693	0.4699	0.4706
1.9	0.4713	0.4719	0.4726	0.4732	0.4738	0.4744	0.4750	0.4756	0.4761	0.4767
2.0	0.4772	0.4778	0.4783	0.4788	0.4793	0.4798	0.4803	0.4808	0.4812	0.4817
2.1	0.4821	0.4826	0.4830	0.4834	0.4838	0.4842	0.4846	0.4850	0.4854	0.4857
2.2	0.4861	0.4864	0.4868	0.4871	0.4875	0.4878	0.4881	0.4884	0.4887	0.4890
2.3	0.4893	0.4896	0.4898	0.4901	0.4904	0.4906	0.4909	0.4911	0.4913	0.4916
2.4	0.4918	0.4920	0.4922	0.4925	0.4927	0.4929	0.4931	0.4932	0.4934	0.4936
2.5	0.4938	0.4940	0.4941	0.4943	0.4945	0.4946	0.4948	0.4949	0.4951	0.4952
2.6	0.4953	0.4955	0.4956	0.4957	0.4959	0.4960	0.4961	0.4962	0.4963	0.4964
2.7	0.4965	0.4966	0.4967	0.4968	0.4969	0.4970	0.4971	0.4972	0.4973	0.4974
2.8	0.4974	0.4975	0.4976	0.4977	0.4977	0.4978	0.4979	0.4979	0.4980	0.4981
2.9	0.4981	0.4982	0.4982	0.4983	0.4984	0.4984	0.4985	0.4985	0.4986	0.4986
3.0	0.4987	0.4987	0.4987	0.4988	0.4988	0.4989	0.4989	0.4989	0.4990	0.4990
3.1	0.4990	0.4991	0.4991	0.4991	0.4992	0.4992	0.4992	0.4992	0.4993	0.4993
3.2	0.4993	0.4993	0.4994	0.4994	0.4994	0.4994	0.4994	0.4995	0.4995	0.4995
3.3	0.4995	0.4995	0.4995	0.4996	0.4996	0.4996	0.4996	0.4996	0.4996	0.4997
3.4	0.4997	0.4997	0.4997	0.4997	0.4997	0.4997	0.4997	0.4997	0.4997	0.4998
3.5	0.4998	0.4998	0.4998	0.4998	0.4998	0.4998	0.4998	0.4998	0.4998	0.4998
3.6	0.4998	0.4998	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999
3.7	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999
3.8	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999
3.9	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000

FOLD AND TEAR ALONG PERFORATION

FOLD AND TEAR ALONG PERFORATION

NAME: (LAST NAME)

(FIRST NAME)

PERMANENT MAILING ADDRESS:

(Apt./Street/Ave./P.O. Box)

(Village/Town/City)

(Postal Code)

DATE OF BIRTH: Y M D

SEX:

SCHOOL CODE: **SCHOOL:**

SIGNATURE:

APPLY LABEL WITHOUT STUDENT'S NAME

MATHEMATICS 30

APPLY LABEL WITH STUDENT'S NAME

MATHEMATICS 30